Army Engineers Help Restore Iraqi Wetlands

Photo courtesy USAID

By Ms. Nani Gould

The Mesopotamian Marshlands, considered by many to be the cradle of civilization, were largely drained by Saddam Hussein's regime. Now, the US Army Corps of Engineers (USACE) is helping restore the historic wetlands. Located between the Tigris and Euphrates Rivers, the marshes were once among the world's largest wetlands. Within this 8,000-square-mile area, the 5,000-year-old culture of the Madan, or Marsh Arabs, developed the first alphabet.

Before their destruction, the Mesopotamian Marshlands spanned an area roughly twice the size of the Florida Everglades. Known for their biodiversity and cultural richness, the marshes were home to millions of birds, fish spawning and nursery areas, and various agricultural crops. The devastation seen under the hand of the former regime has been compared to the deforestation of the Amazon.

After putting down a rebellion by the Marsh Arabs at the end of the Gulf War, the Iraqi government set its full wrath upon the group—burning towns, killing livestock, and making the drainage of the marshlands a top priority. An estimated 150,000 people were displaced during this time; some were forced to relocate as many as 18 times.

By 1999, the marshlands had been reduced to 7 percent of their original state. Many endemic species were lost, a natural filter system for protecting rivers and the Persian Gulf from waste and pollutants was devastated, and an entire culture rich in history was destroyed. The area was in dire need of structure and rebuilding efforts.

The US Agency for International Development (USAID), an independent federal government agency that funds development projects in many countries, is leading the effort to restore these marshlands. USAID, the Iraqi Ministry of Water Resources (MoWR), and USACE are developing a water management model that will aid efforts to reconstruct Iraq's historic water flow system and restore Iraq's marshes.

To help the remaining marshland population and support other US efforts to secure Iraq's infrastructure, USAID turned to the Corps's Hydrologic Engineering Center (HEC) for its expertise in modeling water management in large watershed systems. The HEC is responding by developing a reservoir-simulation model (See article on page 10.) This model will provide real-time simulation to help US officials and the new Iraqi leadership make smart operational decisions to maintain and update the country's complex system of dams and canals.

After the invasion, Iraq's dam and infrastructure system was intact, but the institution was in disarray. The MoWR headquarters building had been burned, and its ability to manage the complex system of dams and barrages was significantly compromised. The HEC Reservoir System Simulation (HEC-ResSim) model will provide modern technology for use in both day-to-day operational decisions and long-term water resource management studies.

The HEC-ResSim model is being developed in two phases. Phase 1, which established a relationship between the HEC and other Iraqi groups working with the marshlands, also successfully developed the concept of the water control system. Phase 1 was completed in November 2003. Phase 2 develops the model in more detail and extends the lower boundary to marsh areas. It also adds structure and develops data sets useful in long-range planning and studies of alternative operations.

The HEC-ResSim model will provide the MoWR with the capability to make detailed assessments of the consequence of alternative reservoir releases prior to issuing operation instructions to dam operators. Also, other Iraqi agencies, such as the Ministry of Environment, and nongovernmental agencies interested in marsh restoration, such as the US-based Iraq Foundation, will be able to use the model in support of their studies and activities. The partnership between USAID, MoWR, and USACE is designed to eventually restore the Mesopotamian Marshland ecosystem through improved management of the nation's water infrastructures and natural resources.

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